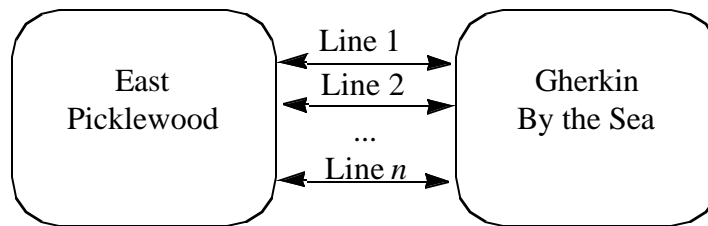# Assignment 2

1. Between two cities, East Picklewood and Gherkin By the Sea, there are a fixed number, n, of long-distance phone lines (see Figure 1). Each line can handle a single call from one city to the other at a time.

Figure 1. Lines Between the Cities

If a person in a city wishes to place a call to the other city and a line is open, the call goes through immediately on one of the open lines. If all n lines are busy, the caller receives a busy signal and must hang up and try another time. There is no queueing for lines when they are all busy. From the model standpoint, that call is lost forever.

Formulate an Event Graph model that is capable of estimating the (time) average number of busy lines and the proportion of lost calls. Assume that calls arrive to each city according to an arrival process that is different for each city and that the calls between each city are given by a single sequence, regardless of which city the call is placed from.

2. Two workcenters in a production facility operate in tandem. Each part must be processed by workcenter 1 and then by workcenter 2 in succession. Each workcenter has a certain number of identical machines operating as a multiple server queue. Parts arrive to the system according to an arrival process. It takes a certain amount of time for a part to move from the first to the second workcenter, and that time could be random.

Formulate an Event Graph model that can estimate the average number of parts in each queue and the average utilization of the servers.

For each of your models, be sure to define your parameters and state variables and give a clear drawing of your Event Graph.